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ABSTRACT

This publication is intended to aid practicing educators in reviewing and utilizing current principles of problem-solving and decision-making. The booklet is organized in five short sections that briefly discuss different aspects of organizational problem-solving and outline suggested steps to guide educators in applying problem-solving techniques to educational situations. These sections focus in turn on analysis of job priorities and objectives, decision-making as related to learning designs, problem analysis, potential problem analysis, and implementation of educational plans. (JG)

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A Handbook

for Teachers, Supervisors

and Administrators

SYSTEMATIC PROBLEM SOLVING AND DECISION MAKING

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Forward

This handbook was written for Educators with the objective of providing resource material to facilitate your reviewing and applying current principles of problem solving and decision making.

As educators, we are involved in problem solving and decision making processes, and we function as: learning specialists and instructors, program and staff administrators, and contributors to organizational problem solving. Within that framework, this handbook presents four areas of information to facilitate the attainment of desirable educational processes and products or conclusions.

1. Your job
2. Decision making
3. Problem analysis
4. Potential Problem analysis

There are multiple uses of the terms "education" and "training" in the educational system. For the purposes of this booklet, the terms are used as follows:

> Education - results in an individual's acquiring knowledge. The term is used in one of its limited senses to mean instruction. It is a learning experience which focuses on subject matter and content.
>
> Training - results in an individual's performing a task as specified in a learning experience which includes only as much subject matter as is necessary to enable the learner to perform the task.

Your Job

A. Recognize Situations

B. Separate

C. Set Priority

D. Classify

It is your decision whether you work as an administrator, teacher, or supervisor in education. Either role of the three is concerned with effectively analyzing problems, making decisions, anticipating potential problems, and/or implementing plans.

Accordingly, the following steps are essential to your functioning successfully in either role:

A. Recognize Situations

List all of the things you have to do associated with the job.

B. Separate

List the things you have to do as manageable assignments. Large projects or complex assignments should be divided into smaller pieces to facilitate planning, implementation, and reporting.

C. Set Priority

1. Obtain your supervisor's agreement on the priorities you have established for your assignments.
2. Determine how you and your supervisor will know when your highest priority assignments have been successfully completed.
3. Allocate your time and resources accordingly.

D. Classify

1. Start work on your highest priority assignments.
2. Determine where you are in the Action Sequence (you may have to collect more data):

    Problem analysis
    Decision making
    Potential problem analysis
    Implement a plan

3. Continue work on your highest priority assignment until you encounter a delay:

   Planned delay - work on second highest priority until you can do more work on highest priority assignment.
   Unplanned delay - review with your supervisor.

NOTES

Decision Making

A. Establish Objectives

B. Classify Objectives

C. Generate Alternatives

D. Compare and Choose

This material applies to decision making when the Probable Cause of concern is "when the staff or student does not know how to do a task."

A. Establish Objectives - Objectives include:

A statement of tasks and associated job performance task/test to be learned.

Limitations of the problem solution such as time, numbers to be trained or instructed, location, costs, etc.

B. Classify Objectives (must/want)

C. Generate Alternatives

Any solution to any problem is limited absolutely by the number of alternatives and combinations of alternatives which are generated and considered.

In training situations, the generation and consideration of alternative learning designs should be applied separately to each task. Creativity and imagination are required to develop useful alternative learning designs. Alternatives are often limited by the individual designing the program rather than or as well as the situation itself.

The result of this step in the process is a learning design - selected from among alternatives - tailored to each task and taking into account all relevant facets in the on-the-job situation.

D. Compare and Choose

1. The learning design selected for each "must" task/test should enable the learner to do the task/test.

2. Selection of the learning design for each task/test, usually affected by cost/effectiveness considerations.

3. The learning design selected for each task/test is the beginning of a Training Plan. To the Plan should be added:

   Steps necessary to accomplish the design selected.
   Appropriated points for management sign off.
   Commitment of time.
   Cost estimates when appropriate.

4. The completed Plan may be implemented at this point, or it may become part of a larger plan.

NOTES

Problem Analysis

A. Compare Should and Actual

B. Specify Deviation

C. Develop Possible Causes

D. Test for Probable Causes

E. Verify

In Problem Analysis where part of the solution is a training program, research shows that effective problem analysis minimizes learning time and program maintenance. Note that people problems require special application of the problem analysis process.

THING PROBLEMS	PEOPLE PROBLEMS
A. Compare Should and Actual	A. Compare Should and Actual
B. Specify Deviation	B. Specify Deviation - A well specified deviation. Can Answer: "Doesn't know how to do what?" This provides a task list, but not a complete task analysis. Assists in making good judgements when it is necessary to take action against the deviation.
C. Develop Possible Causes	C. Develop Possible Causes "Doesn't know how to" or All other possible causes.
D. Test for Probable Cause	D. Test for Probable Cause or Omit.
E. Verify Take action against Probable Cause Training usually is not an alternative solution.	E. Verify Take action against Probable Cause Training is usually an alternative or Omit - Take action against Deviation. *Training usually is not an alternative solution.

*An individual's performance or behavior is a function of the individual and his environment. Agreement about Probable Cause in situations involving behavior is sometimes difficult. As a practical matter, it has been found expedient to take action against a Deviation when the Cause is "Doesn't know how to."

NOTES

Potential Problem Analysis

A. Anticipate Problems. Prioritize

B. Anticipate Likely Causes

C. Select Action

D. Provide for Information

A. Anticipate Problems. Prioritize

Potential problems in training situations include:

The original problem is not solved; the Deviation is not corrected.

Learning design and associated materials do not enable recipients to learn to do the task/test.

Learning design is not compatible with the work situation.

Program is too expensive

Administration will not accept the plan.

Best resource has not been used.

Learning is not being reinforced on the job

Learning design and/or materials have become outdated.

Administration is not kept informed of Program results.

Program is not utilized for other locations/groups of staff where it would be appropriate to do so.

B. Anticipate Likely Causes

C. Select Action (preventive/contingent)

Among actions that can be taken are:

Change Learning design

Use different education material/methods.

Test with one or two individuals, including evaluation.

Conduct pilot program, including evaluation.

Make presentation to management (administration).

Review Program with staff/other components.

Publicize results of Program.

D. Provide for Information

1. Include appropriate check points and administration sign off in plan.

2. Document with end-of-program Report.

NOTES

Implement An Educational Plan

Once a problem has been identified and the deviation has been specified to the point of clarity, and it has been determined that part of the problem solution is for an instructor or student to learn to do a job, the following plan for developing a learning program is often followed:

A. Collect and analyze data about the job.

B. Prepare task list and associated performance test for each job.

C. Obtain instructor concurrence with Step B.

D. Develop alternative learning designs and teaching methods for each task.

E. Select the best design/method for each task. Consider cost/effectiveness/work environment etc.

F. Prepare a schedule for developing/assembling required teaching materials, facilities, personnel and learners. Specify responsibilities and completion dates.

G. Obtain administration concurrence with Steps E and F.

H. Collect/prepare required teaching materials, facilities and personnel. Use best available resources.

I. Review learning program with administration and instructor for approval.

J. Conduct pilot run of learning program.

K. Evaluate pilot program and make appropriate modifications.

L. Obtain administration and instructors concurrence with Step K.

M. Prepare learning program in final form.

N. Send completed program to the administration.

O. Assist instructors to complete learning program as required.

P. Arrange for continuous evaluation/feedback.

Q. Arrange for continuous updating of program.

R. Ensure that purchase orders are handled properly and on time.

NOTES

Related Readings

P. F. Drucker, "The Effective Executive."

C. H. Kepner and B. B. Tregoe, "The Rational Manager, A Systematic Approach to Problem Solving and Decision Making."

Chester Bernard, "The Functions of the Executive."

Getzels, Lipham, and Campbell, "Educational Administration As a Social Process: Theory, Research, Practice."

John Pfieffer, "New Look at Education, Systems Analysis In Our Schools and Colleges."

Rensis Likert, "The Human Organization."

A. O. Elbing, "Behavioral Decision in Organization."

Gage, "Handbook of Research on Teaching."

R. C. Davis, "Planning Human Resource Development."

G. G. Eye, and L. A. Netzer, "Supervision of Instructions: A Phase of Administration."

K. Wiles, "Supervision" in C. W. Harris edition of Encyclopedia of Educational Research.